

REMARKS

Reconsideration of the present application is requested.

Claims 25, 26 and 32 have been canceled to eliminate the issue raised in section no. 3 of the Official action.

The remaining claims stand rejected over Rinnemaa. The Rinnemaa invention involves a rock drill and deals with inaccuracies or deviations that may occur when moving a feeding beam of the rock drill to a desired position. Rinnemaa points out that when the beam 6 in Fig. 1 is inclined from a reference position in only one plane, a sensor 7 can accurately measure the angle of inclination. However, when the beam is inclined from the reference position in two planes, the sensor accuracy is diminished. In particular, with reference to column 5, lines 23-34 of the patent:

when the feeding beam is inclined solely in the direction of one measuring plane, such as the y plane, the sensor of this plane indicates accurately the inclination of the feeding beam. When the feeding beam is additionally turned in the direction of the x plane, the sensor 7y gives a greater angle value even though the angle actually remains unchanged in the direction of the y plane. As a consequence, when calculating the actual direction of the feeding beam, the influence of the inclination in the direction of the other plane has to be taken into account in order to avoid erroneous drilling direction.

To deal with that problem, Rinnemaa takes advantage of the fact that since the errors or deviations are based upon geometry, it is possible to calculate the deviation once the values of the angles are supplied by the angle sensors. In other words, Rinnemaa never measures actual deviations, he calculates them on the basis of knowing the values of the angular turns that the beam is to undergo (column 2, lines 62 to column 3, line 5).

While that solution may serve to compensate for geometric deviations, it does not compensate for deviations resulting from deflections of parts, and clearances between parts, etc.

The present invention compensates for all sources of deviations because the invention involves measuring the deviations themselves. That is, the boom is moved from position to position incrementally, so that the deviation of the actual position from the expected position can be measured. That takes into account all sources of the deviation.

Claim 15 recites, inter alia, storing, in a memory, a first set of deviations obtained by turning the boom through incremental turning angles from a reference position, and measuring using a movement sensor, a deviation from a desired incremental turning angle.

Similar recitations are provided in claims 19, 23, and 34.

In the Official action, the following assertions were made regarding Rinnemaa:

1) "The deviation of the boom position from the theoretical position is measured at predetermined intervals (inherently discloses) as a function of position of boom joint, and the deviation is corrected on the basis of the stored deviation... (column 2, lines 62-68 and column 3, lines 1-5)" (official action, page 3, first paragraph).

However, nowhere in those cited passages from Rinnemaa is it disclosed to measure a deviation. In column 2, lines 62-68, it is disclosed to take the angle values provided by the angle sensors and then correct them "by calculation".

Also, nowhere in those cited passages is there a disclosure of storing deviations. Calculations are made; but no deviations are measured or stored.

2) "Rinnemaa discloses an apparatus and method in which sets of deviation are collected and saved in memory" (column 7, lines 54-59)." (official action, page 3, last paragraph)

~~That part of the patent's description relates to the situation where inclination of~~
carrier must be taken into account. This is done by storing the inclination into a memory. This has nothing to do with the storing of deviations as in the presently claimed invention.

3) "The deviation collected is feed back to the next calculation to reduce error. (column 2, lines 62-68 and column 3, lines 1-5)". (official action, last sentence of section no. 6)

It is not clear how the cited passages support this statement. The cited passages say nothing about feeding deviations.

In light of the foregoing, it is submitted that Rinnemaa does not disclose the presently claimed invention, and that the application is in condition for allowance.

Respectfully submitted,

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